

Defining Learning Communities in Undergraduate Medical Education: A National Study

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ABSTRACT

BACKGROUND: Learning communities (LCs) are intentionally designed groups that are actively engaged in learning with and from each other. While gaining prominence in US medical schools, LCs show significant variability in their characteristics across institutions, creating uncertainty about how best to measure their effects.

OBJECTIVE: The aim of this study is to describe the characteristics of medical school LCs by primary purpose, structures, and processes and lay the groundwork for future outcome studies and benchmarking for best practices.

METHODS: Medical school LC directors from programs affiliated with the Learning Communities Institute (LCI) were sent an online survey of program demographics and activities, and asked to upload a program description or summary of the LC's purpose, goals, and how it functions. Descriptive statistics were computed for survey responses and a qualitative content analysis was performed on program descriptions by 3 authors to identify and categorize emergent themes.

RESULTS: Of 28 medical school LCs surveyed, 96% (27) responded, and 25 (89%) provided program descriptions for qualitative content analysis. All programs reported longitudinal relationships between students and faculty. Most frequently cited objectives were advising or mentoring (100%), professional development (96%), courses (96%), social activities (85%), and wellness (82%). Primary purpose themes were supporting students' professional development, fostering a sense of community, and creating a sense of wholeness. Structures included a community framework, subdivisions into smaller units, and governance by faculty and students. Process themes included longitudinal relationships, integrating faculty roles, and connecting students across class years.

CONCLUSIONS: Medical school LCs represent a collection of high-impact educational practices characterized by community and small-group structures, relational continuity, and collaborative learning as a means to guide and holistically support students in their learning and development as physicians. In describing 27 medical school LCs, this study proposes a unifying framework to facilitate future educational outcomes studies across institutions.

KEYWORDS: learning communities, undergraduate medical education, medical students, professional formation, mentoring

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Introduction

Learning communities (LCs) are historically defined in the lay literature as intentionally designed groups of students and/or faculty who are actively engaged in learning with and from each other.¹ Groups generate a sense of community with each other when 4 elements are present: a sense of membership, a sense of personal influence, integration and fulfillment of personal needs, and shared emotional connections.²

Drawn from the British house system of dividing students into smaller units to instill a sense of tradition, identity, and belonging, Meiklejohn and Dewey in the early 20th century set

the foundation for contemporary LCs at 2 US universities by creating longitudinal, interdisciplinary programs centered on holistic learning.³ By the 1980s, LCs in higher education came to the forefront, propelled by increasing diversity among college-bound students and rallying calls to enhance student-faculty interaction and provide a greater sense of wholeness to the collegiate experience.^{4,5}

In their contemporary form, LCs in higher education are more specifically defined as curricular linkages providing students with a deeper examination of themes or concepts that they are learning.³ Collegiate LCs restructure time, space, and



curricula by linking courses and disciplines, creating smaller cohorts among larger enrollments, or living-learning environments to provide greater coherence, active learning, and meaningful connection between faculty and students.^{6,7} Students participating in LCs in college show higher engagement, enhanced academic performance, and higher retention rates as compared with non-LC peers.⁸

In contrast, LCs in undergraduate medical education (UME) developed more recently and encompass multiple activities, from teaching professionalism and clinical skills to enhancements in advising, student-faculty relationships, and student wellness.^{9–11} A 2006 study identified 18 medical school LCs, and described a variety of goals, including fostering student-faculty communication, building academic and social support networks, and promoting teamwork.¹² Seven years later, Smith et al¹³ identified 66 US medical schools with LC programs, with more than half of these starting in 2007 or later. These LCs showed significant variability in their objectives, organization, and activities, raising the question of how cross-institutional studies could be conducted across varying taxonomies, goals, and frameworks. Although the current number of medical schools with LCs is not known with certainty, a 2014 survey by the Liaison Committee on Medical Education (LCME) found 102 of 140 responding AAMC schools reporting “organizing students into colleges or mentorship groups,” with student wellness, mentoring, academic and career counseling, and professionalism as frequently cited objectives.¹⁴

Evidence to date suggests that UME LCs are affecting the medical student experience in a variety of important ways. Jackson et al¹⁵ found that students participating in an LC-directed clinical skills course at the University of Washington performed better in clerkships compared with pre-LC peers. Levine et al¹⁶ found that LC students at Johns Hopkins reported higher quality advising, an enhanced sense of community, and better social integration as compared with a graduating cohort that did not participate in the LC. In a national study of the medical school learning environment, Smith et al¹⁷ found that first- and second-year students in schools with LCs rated the learning environment significantly higher than students in non-LC schools. Brandl et al¹⁸ found that students’ perceptions of connectedness to faculty with small-group learning within academic communities were significantly higher compared with non-LC small-group activities. Sastre et al¹⁹ reported that student satisfaction with faculty advising and wellness counseling improved significantly after an LC was constructed to address these needs. Medical school faculty are positively affected by their LC involvement, reporting high levels of job satisfaction as well as sense of engagement and productivity in their LC roles.²⁰ To support this growing LC movement in health professions schools, a coalition of medical school faculty founded the not-for-profit Learning Communities Institute (LCI) in 2012, to foster collaboration for LCs across institutions.²¹

Given that many AAMC medical schools are presently utilizing a variety of LC structures, there is a timely and compelling need to establish greater coherence in understanding these programs to facilitate benchmarking and investigate educational outcomes across institutions. The purpose of this study is to attempt to better characterize LCs in UME by describing the primary purpose, structures, activities, and processes of the LC programs of institutional members of the LCI.

Methods

Study setting and participants

Participants were LC directors from the LCI (reference website—www.learningcommunitiesinstitute.org) member institutions in 2015. We selected LCI institutional member medical schools as the LC programs to study as this sample includes programs that had clearly identified LCs with a deliberate approach to program development. In addition, we were aware that this sample included programs both established and new, with diversity in medical school size, location, public or private orientation, and goals. We also believed that these LCI affiliated programs would be highly motivated to participate in this study and thus could ensure a response rate >70%.

Study design

We developed the 14-item survey based on the authors’ (RS, MK, AF, JW, KM) 40 years of combined experience as LC program directors, as well as on prior UME LC surveys.^{12,13} Survey items included basic demographics, respondent’s role, LC start date, number of students and faculty involved, phases of the curriculum where the LC is active, and objectives. Supplemental Appendix 1 lists these survey questions. In addition, the survey requested that participants upload a publicly available LC program description, or in the absence of a pre-existing document, describe its primary purpose, values, goals, and how it functions, to facilitate qualitative content analysis.

Data collection and analysis

We emailed the survey link to LC directors in May 2015 with 2 reminders sent prior to August 2015. We computed descriptive statistics for survey responses, and we merged submitted program descriptions and narratives into 1 document. Using an editing style described by Miller,²² 3 authors (RS, AF, MK) independently read and coded the program descriptions, iteratively reviewing codes to identify and categorize emergent themes. In a few circumstances when the program description or narrative supplied was deemed insufficient for analysis, coding authors reviewed the medical school’s public website for additional information about their LC before completing the analysis. The Johns Hopkins School of Medicine Institutional Review Board approved this study.

Table 1. Characteristics of 27 medical school learning community programs.

	N (%)
Involve entire student class	25 (93)
Extent of longitudinal student participation	
All 4 years	13 (48)
Pre-clerkship and clerkship years	9 (33)
Pre-clerkship years only	4 (15)
Clerkship and post-clerkship years	1 (4)
Committed faculty per program ^a (mean)	25.7
Median program age in years (range)	8.6 (0-44)
Medical schools sponsoring LCs	
Public	20 (74)
Private	7 (26)
The United States	26 (96)
Mexico	1 (4)
Frequency of student-faculty meetings	
Weekly or bi-weekly ^b	19 (70)
Monthly	6 (22)
4-6 times/year	2 (7)

Abbreviation: LC, learning community.

^aExcludes volunteer faculty; 26 schools.

^bFormal, scheduled meetings occur weekly or bi-weekly for several months, typically as part of a course, then continues less frequently.

Results

In 2015, there were 28 LCI institutional members and 96% (27) of LC directors from those institutions responded to the survey with 25 (89%) providing additional detailed program descriptions sufficient for qualitative content analysis. LC program directors completed 23 surveys (85%), while 2 surveys (7%) were completed by LC coordinators/staff and 2 (7%) by LC faculty mentors. Characteristics of the LC programs are shown in Table 1.

Faculty-student structure of LCs

All respondents (27) indicated that the relationship between students and faculty was longitudinal. First-year medical students were involved in 26 of 27 LC programs. The exception, a regional clinical training site of a medical school, involved students on their arrival for clerkships and other clinical rotations (years 3-4). Twenty-four schools supplied data regarding the number of students involved in their LCs and how long their LCs have been in operation (see Table 2).

Program structure of LCs

The type of objectives these LC programs seek to achieve are shown in Table 3, with most LCs addressing a broad range of

activities including professional development, curricula, mentoring, advising, wellness, and social events. Twenty-two (81%) of the 27 LCs teach clinical skills and/or medical humanities courses, 15 teach only clinical skills, 7 only teach medical humanities, and 4 of these programs teach both types of courses. Research curricula are not represented in these LCs.

Qualitative Analysis of Program Narratives

Twenty-five (93%) of the 27 LC programs submitted program descriptions or narratives suitable for content analysis. We organized emergent themes into 3 response categories: primary purpose, structure, and processes. Parameters describing these domains are listed in Table 4.

Primary purpose

Twenty-four (96%) of these 25 programs included a statement of primary purpose in their LC program description. Three overarching themes best described the mission and/or primary purpose of these LCs: shaping and supporting students' professional development, fostering a sense of community, and creating a sense of integration and wholeness.

Professional development

Shaping and supporting students' professional development characterized the primary purpose of 12 programs (50%). These LCs teach clinical skills courses, emphasize compassionate patient-centered care, and provide mentors for professional identify formation and/or advising for academic and career development. A common characteristic is a merging of traditionally distinct faculty roles, particularly clinical skills instruction with longitudinal mentoring and advising. Two such LCs described their primary purpose:

Our program combines a clinical skills and professionalism curriculum with a mentoring program to train compassionate, expert physicians to practice outstanding patient-centered care.

With prime responsibilities for advising, counseling and mentoring . . . the Societies are responsible for monitoring the academic progress of each student and assuring progressive professional development of its students.

Sense of community

Fostering a sense of community described the mission or primary purpose of 7 LC program descriptions (28%). The central focus for these LCs include developing and sustaining a supportive learning environment, building relationships between students and faculty, and fostering relationships among students. These LCs prioritized the value of personal relationships as integral to the student experience, serving to enhance students' personal and professional learning. Two such LCs described their primary purpose:

To create a nurturing and highly supportive environment that allows each student to succeed on their journey . . . by fostering peer-to-peer

Table 2. Twenty-four medical school learning community programs with year started and first year students involved in 2014-2015.

MEDICAL SCHOOL ^a	YEAR LC STARTED	MS1 STUDENTS IN LC IN AY 2014-2015 (N)	TOTAL STUDENTS EXPERIENCING LCS BY 2018
University of Missouri—Kansas City	1971	162	7614
Harvard	1985	175	5775
University of Kansas	1999	211	4009
Carver College—University of Iowa	1999	152	2888
University of Washington	2001	240	4080
Johns Hopkins	2005	120	1560
University of Arizona—Tucson	2006	115	1380
University of Texas—Southwestern	2007	235	2585
Vanderbilt University	2007	112	1232
Stanford University	2008	117	1170
The Ohio State University Wexner College	2008	208	2080
University of California San Diego	2010	125	1000
University of Massachusetts	2010	125	1000
University of Virginia	2010	156	1248
Morehouse	2011	63	441
University of Cincinnati	2011	173	1211
Rosalind Franklin University	2011	190	1330
Oregon Health and Sciences University	2012	125	750
Penn State	2013	145	725
University of Utah	2013	100	500
Western Michigan University—Homer Stryker	2014	54	216
University of New Mexico	2014	103	412
Tecnológico de Monterrey—Mexico	2014	180	720
University of Michigan	2015	170	510
Total		3556	44 436

Abbreviations: AY, academic year; LC, learning community; MS: medical school.

^aData for 3 of 27 programs not available at the time of publication.

connections through shared experiences, mentoring relationships with community faculty members and peers, and opportunities . . . [for] service that is responsive to the needs of the local community.

The main goal of the Colleges program is to foster a sense of community among students and faculty, building bonds and supporting one another, despite their differences—which is necessary . . . to learn, grow and show compassion students will need as physicians.

Integration and wholeness

Creating a sense of integration and wholeness to the experience of being a medical student described the mission or

primary purpose of 5 LC programs. These programs oriented their efforts to create opportunities for perspective taking across courses, student advising, wellness efforts, and service learning within the context of the curriculum. Two such LCs described their primary purpose:

Students come together in smaller groups to delve into subject matter relevant to their growth and development [to discuss] themes of student wellness, staying balanced during medical school, and helping them choose careers that lead to lifelong professional happiness.

To provide clinical education that will help integrate all aspects of the curriculum over the first two years of medical school . . . teaching . . .

Table 3. Frequency in percentages of learning community programs which seek to achieve the following objectives (respondents selected all that apply) for 27 medical schools.

OBJECTIVE	FREQUENCY (N)	%
Professional development/professional identity formation	26	96
Course offerings	26	96
Clinical skills	15	56
Medical humanities	11	41
Other content areas	10	37
Mentoring or advising	27	100
Mentoring	26	96
Career advising	24	89
Academic counseling	20	74
Social activities	23	85
Student wellness	22	82
Community service	12	44
Peer advising	2	7
Residency competencies	2	7
Bioethics discussions	1	4
Assessment and feedback	1	4
Research	0	0

Table 4. Description of 3 domains for qualitative analysis of LC program descriptions.

THEMATIC DOMAINS	PARAMETERS
Primary purpose	Why does this LC exist? What is it primarily intended to accomplish?
Structure	How is the LC constructed? Who is involved? How is it supported? How is it connected to the curriculum or year of medical school? How does it relate to the other structural elements of the school?
Processes	How do participants in the LC interact to perform LC objectives? What is the nature of student-faculty contact over the years of medical school?

Abbreviation: LC, learning community.

aspects of the art of medicine that do not fall under a particular specialty or domain.

LC structures

Although we found variability among institutions, 3 common structural elements were found among the 25 programs: a community organizational framework, subdividing communities into smaller learning units, and governance and leadership roles for faculty and students.

Organization into communities. Creating distinct communities among students within the medical school was described by all programs. The number of communities within an LC varied

from 4 to 17, with 4 described most frequently, among 11 schools. These schools refer to their LC programs as Colleges, Societies, Communities, Houses, Academic Societies, Academies, and Docent Teams. Each community within an LC program bears a unique name that carries special significance for the school, such as of distinguished alumni or faculty, landmarks, geographic regions, natural elements, disciplines of interest, or aspirational qualities. In most cases, students join the communities on entry to medical school. Details of how students are assigned to communities was not uniformly provided, but 6 detailed the assignments as random, with a balancing process (eg, sex, underrepresented students) such that individual communities reflect the demographics of each class. One program described community assignments based on

students' career interest. Dedicated space for LC activities was mentioned in 6 program descriptions. A consistent organizational feature is a student's longitudinal affiliation to their LC community, as 21 (84%) of the LC programs described providing continuity in these relationships across all 4 years of the medical school curriculum. Two programs describe their community structures in this way:

Each incoming student will be assigned to one of the six Academic Communities (AC) and maintain this affiliation over their entire medical school career. As such, each AC would contain approximately 21 medical students from each class and a total of approximately 84 medical students.

Subdividing students into smaller learning units. Twelve LCs described subdividing students and faculty into smaller, longitudinal learning groups within each community, composed of 5 to 8 students and 1 to 2 faculty members. The learning groups are the functional units of the LC, accomplishing its educational goals and forming the foundation for longitudinal teaching and advising relationships between students and faculty and among students spanning multiple years of medical school. A description of an LC structure is included below:

Students are grouped into units of 5 with one dedicated [faculty] advisor, termed the "advisory molecules." In addition to ongoing individual meetings between students and advisors, the molecules function as longitudinal learning teams in the Year 1 Clinical Foundations of Medicine course, and remain in connection over their four years to reflect and dialog about important learning experiences that impact their professional identities.

Faculty and student roles and governance. Most of the LC programs studied described community leadership structures led by faculty members in roles titled Heads, Directors, Mentors, and Deans. Faculty selected to participate in an LC serve in roles that involve teaching longitudinal learning groups, mentoring, and advising. Six LC programs described interdisciplinary teaching roles for non-MD faculty. Students in these programs are assigned to a community and learning group by class year; however, each community is typically comprised of multiple class years of students, and several programs described deliberate efforts for vertical integration within a community. The following are 2 descriptions of faculty roles and governance:

Our diverse group of 20 carefully selected House Mentors are each randomly assigned to 6 or 7 students each year. They will shepherd their students through medical school from matriculation to graduation. We call them "Mentors" because they are highly trained to serve their students as teachers, advisors, and—most importantly—advocates.

Student support services have been restructured into four colleges. Each is headed by a Dean for Student Affairs who works with individual students and the college . . . to provide career counseling, address personal well-being, oversee academic progress, identify

professionalism concerns, and advocate for students in all aspects of their medical education.

Four LC programs described leadership roles for students, included peer mentoring, advising, and positions to oversee the social activities and community service functions of the LC. One program described their student leadership roles as follows:

With the support of community staff, students initiate and provide leadership for activities. Student leaders from each community are elected each year. All four communities have the position of mayor/co-mayor, treasurer, and secretary.

Three institutions described unique LC structures. The University of Missouri Kansas City, with a 6-year combined BA-MD degree curriculum, described a vertically integrated team structure situated within outpatient clinics. The University of Illinois described an LC for students from underrepresented backgrounds spanning from high school to medical school to provide mentoring and support for those pursuing health professions careers. The State University of New York Stony Brook Winthrop campus LC provides mentored longitudinal learning groups for clerkship year students assigned to their training site for clerkship rotations. In each instance, the LC structure addressed unique educational needs.

LC activities

Twenty-three (92%) of the 25 programs described offering a range of student activities largely reflecting the objectives shown in Table 3. However, details provided in program descriptions were insufficient to categorize these activities more fully. Frequently cited activities included student advising, mentoring, small-group reflections, courses (clinical skills, humanities, and ethics), wellness events, community service, social gatherings, school competitions, and milestone events (eg, White Coat Ceremony, Match Day, and convocation).

LC processes

Twenty-two (88%) of the 25 program descriptions described unique processes of student and faculty interaction within the LC in achieving their goals. Three predominant themes were noted: the formation of longitudinal relationships between students and faculty, integration of faculty roles and of the student experience within the LC, and connecting students across class years.

Longitudinal relationships. LC programs described the deliberate formation of longitudinal relationships between students and faculty extending beyond a single course, activity, and in most cases, beyond 1 academic year. These LC relationships are quite purposeful, with an intention to enhance students' learning, academic success, professional growth, social support, and

well-being. In most cases, these relationships begin when students arrive to medical school and continue until graduation. Two LC programs described such relationships:

Academic Colleges . . . bring together gifted faculty members with small groups of students (typically six) so the students can observe and mirror the professional clinical skills, behaviors, and attitudes of highly experienced physicians. During their first two years, students meet weekly with faculty members in their College group, [then] consistently throughout the student's medical school career.

This program provides longitudinal, personal mentoring to each of our students throughout their tenure at [the School of Medicine] and highlights the commitment of the school to professional development. Mentors meet with each of their students a minimum of 3 times annually . . . These sessions cover the key medical student domains of personal adjustment, academic progress, professional development, and career guidance.

Integrated faculty roles. Another prominent theme is an integration of faculty roles across a spectrum of academic, social, and student service activities under the LC umbrella to create a more coherent and personalized learning experience for students. Programs described introducing foundational curricula within LC structures early in medical school, taught in small groups by LC faculty (eg, clinical skills, medical humanities). LC faculty assume a variety of roles beyond teaching, interacting with students within their communities as mentors, advisors, facilitators of small-group reflection activities, as well as in community service, extracurricular, and ceremonial milestone events. Two programs described this role integration:

The College Program combines a clinical skills and professionalism curriculum with a mentoring program, providing consistent individual mentorship for students, [and] carrying out our work in a learning community of College faculty who model collaboration and cooperation, respect, excellence, engagement, humility, and integrity while creating a learning community of students founded on these same qualities . . .

The Academic Community Directors (ACD) will provide structure and support to all medical students throughout the four years of medical education. ACDs will integrate mentoring, service learning, career advice and special community programming for all medical students in their designated communities.

Connecting students across class years. In addition to fostering connections among students in learning groups and communities within a class, 10 LC programs described intentional processes to facilitate connections among students across class years, to provide peer mentoring, advising, and a support network for each student. Situated within an ambulatory clinical practice, an LC program in a 6-year BA-MD school described a deliberate peer mentoring process:

Through the docent team, clinical experience begins immediately in the first year and increases as students advance through the next six years. In Year 3, students [are] paired with a Year 5 senior partner who serves as a mentor, allowing advanced students to take additional

responsibility for the professional development of younger students. This junior-senior partnership allows students to teach each other, as well as build knowledge, skills and camaraderie.

Another LC described peer-to-peer mentoring to support students' academic success:

Our program engages in informal mentoring student to student and faculty to student . . . to cultivate a supportive learning environment, to strengthen . . . student-student relationships, learn about the culture of medicine, [and] how to make the most of your medical education.

Discussion

This study describes the characteristics of 27 UME LC programs affiliated with the LCI, including student-faculty structures and program objectives. Content analysis of 25 program descriptions permitted characterization of primary purposes, structures, and processes. Primary purpose themes included supporting students' professional development, fostering a sense of community, and creating a sense of integration and wholeness. Learning community structures involved a framework of dividing each class into smaller communities at the start of medical school, smaller learning units for course work and advising, and governance structures of faculty and students. Common LC activities included clinical skills and humanities courses, mentoring and advising, wellness activities, social and community events, and milestone celebrations. Building longitudinal relationships between students and faculty and between students, multiple roles for LC faculty, and vertical integration of student represented unifying LC processes.

To the best of our knowledge, this study is the first of its kind to characterize the primary purposes, structures, and processes of LCs in UME across institutions. Learning communities encompass a relationship-centered systems approach to formal and informal learning and professional development, supporting each student on their complex journey to become a health professional.⁹ Paralleling collegiate LCs, UME LCs constitute a high-impact educational practice to foster student success by encouraging students to become highly engaged in the learning enterprise, providing opportunities for deep learning and reinforcing gains in personal development.²³ Although prior studies documented the growth of LCs at AAMC-affiliated medical schools, the variability between programs and the wide range of reported objectives made it challenging to describe a consistent model for these emergent educational structures.¹²⁻¹⁴ The qualitative investigation of 25 LC programs in this study proposes a more coherent framework to facilitate comparative outcome studies across institutions and pave the way for benchmarking of best practices.

All 27 schools in this study indicated that their programming as well as the relationships between students and faculty within the LC were purposefully longitudinal in nature, most extending from the pre-clerkship through the clerkship years. Constructing smaller communities with longitudinal learning

and advising relationships between students and faculty may represent a contemporary response to transform fragmented and isolating learning environments, offering greater capacity for continuity, intimacy, and trust in the learning climate.^{24,25} Students engaged in LC programs at the start of medical school experience a new norm of journeying for 2 to 4 years in connected small groups accompanied by a dedicated faculty mentor. Continuity of peer learning relationships in facilitated small groups creates opportunities for “safe spaces” for reflection, as well as finding one’s voice, both vital components of deep and transformative adult learning.^{26,27} Hauer et al²⁸ found that continuity in student-faculty relationships led to empowering collaborative interactions within a developmental context, while time-limited interactions were characterized more by hierarchy and focus on factual knowledge. In addition, learning in continuous connection in an LC might facilitate students’ professional identity formation. Ibarra²⁹ found that professional identities are highly vulnerable to changes in the environment, are constructed and negotiated in social interaction, and contingent on developing affective bonds to calibrate the value of feedback received.

The UME LCs studied encourage students to integrate into the medical school learning environment in a variety of meaningful ways. Beyond intensive small-group learning experiences, LCs provide advising, mentoring, wellness programs, social activities, community service, and leadership opportunities for students. Although the value of deeper student integration into the medical school experience is not entirely clear, it may provide students with added support in coping with and adapting to the stress of a rigorous, fast-paced curriculum. Tinto and Goodsell³⁰ showed that students engaged in collegiate LCs in their first year showed greater academic and social integration, forming supportive peer groups that conferred both academic and social support. In addition, college students enrolled in a living-learning LC, similar to a UME LC in engaging students inside and outside the classroom, described the sense of seamless learning, a positive academic climate emphasizing community learning along with expectations for involvement and an ethos of relatedness among faculty, staff, and peers.³¹

The impact that LC programs have on medical school faculty is also worthy of consideration. Our findings highlight the expansive role that LC faculty are assuming with students across multiple contexts, including small-group skills and content instruction, facilitation for critical reflection, personalized mentoring and advising, service learning and community service, presiding at ceremonial milestone events, and helping students navigate the institution to accomplish career goals. This scope of engagement represents a new, immersive role for medical school faculty involving longitudinal teaching and mentoring of individuals, groups, and communities in a developmental context. Thus, these roles appear to extend beyond the faculty role typology described by Stoddard and Borges.³² Accruing trust with their students over time, LC faculty move into intimate teaching

spaces with learners, inviting dialog to bring meaning and clarity to the complex experiences medical students encounter.²⁷ Faculty who devote a portion of their careers to serving students in this fashion report great satisfaction in their LC work, *along with* an improved sense of community, productivity, and communication skills.²⁰ Furthermore, LC faculty may form their own communities of learning for their own development, co-creating wisdom about best practices and supporting each other when faced with challenging issues.³³

One of the LCs in this study, the University of Illinois Urban Health Program, strives to advance health equity for underrepresented students seeking careers in medicine. However, little is known about how medical school LCs more broadly might enhance outcomes for these students, as well as others at risk for being marginalized in medical school. Finley and McNair³⁴ reported that underserved college students participating in LCs and other high-impact educational practices experienced significant gains in deep learning and academic outcomes. Rendon³⁵ asserted that consciously validating students as members of an academic and social LC can be of particular value for underserved students, as it assists them in bridging their academic and cultural worlds and constructing social networks. Future studies are needed to explore whether an LC’s deliberate formation of community structures can enhance outcomes for at-risk students and function as a safety net when students express signs of isolation, depression, and burnout.^{36,37}

Several limitations of this study should be considered. First, the study sample was confined to medical school LCs affiliated with the LCI. It is our belief that LC programs affiliated with a professional support organization represented a sample of sufficient size and diversity that were motivated to participate and yielded sufficient data for study. It is possible that unaffiliated LCs are organized differently, but we were unable to find published studies on non-LCI-affiliated LC programs. Second, as a cross-sectional study, the analysis did not capture how these LCs may evolve over time. Third, the content analysis used pre-prepared program descriptions, written for purposes other than for this study. As a result, some descriptions may have omitted information that affected the scope of the qualitative analysis to describe additional aspects of UME LCs. For example, only 4 program descriptions discussed student leadership roles, although these important facets of LCs are described in the literature and worthy of further study.^{38,39}

By describing unifying purposes, structures, and processes across a variety of programs, we believe that medical school LCs represent a high-impact educational practice which embeds students within a social architecture of longitudinal faculty and peer relationships that serves to deepen their learning and development.⁴⁰ Such efforts promote a relationship-centered learning environment, inspire student-faculty engagement, and could be a critical mediating factor for the hidden curriculum.⁴¹ In providing this unifying platform to understand UME LC’s, we hope future studies will begin to

assess outcomes for the many students participating in these educational programs.

Author Contributions

RS served as primary author and contributor on all phases of the project. AF and MK served on the study team for all phases, collected survey data and contributed to the qualitative analysis and manuscript preparation. MB served on the study team and contributed to survey design. KM and JW served on the study team and contributed to survey data collection. JCG served on the study team and contributed to research design and survey data analysis.

Supplemental Material

Supplemental material for this article is available online.

REFERENCES

- Ebers LH, Lenning OT. The Powerful Potential of Learning Communities: Improving Education for the Future. Washington, DC: Graduate School of Education and Human Development, The George Washington University; 1999. ASHE-ERIC Higher Education Report. Vol 26, No. 6.
- McMillan DW, Chavis DM. Sense of community: a definition and theory. *J Community Psychol*. 1986;14:6–23.
- Fink JE, Inkels KK. A history of learning communities within American higher education. In: Benjamin M ed. *A History of Learning Communities from Start to Finish* (New directions for student services series). San Francisco, CA: Jossey-Bass; 2015:5–14.
- Involvement in Higher Learning: Realizing the Potential of American Higher Education. Washington, DC: National Institute of Education, Government Printing Office; 1984. Final Report of the Study Group on Conditions of Excellence in Higher Education. (Stock # 065-000-00213-2).
- Boyer E. *Campus Life: In Search of Community*. Princeton, NJ: The Carnegie Foundation for Advancement of Teaching; 1990.
- Smith BL. Creating learning communities. *Lib Educ*. 1993;79:32–39.
- Inkelas KK, Soldner M. Undergraduate living-learning programs and student outcomes. In: Smart JC, Paulsen MB, Eds. *Higher Education: Handbook of Theory and Research*. Vol 26. New York, NY: Springer; 2012:1–55.
- Tinto V. Learning better together: the impact of learning communities on student success. In: *Promoting Student Success in College* (Higher education monograph series). Syracuse, NY: Syracuse University; 2003:1–8.
- Hafferty FW, Watson KV. The rise of learning communities in medical education: a socio-structural analysis. *J Cancer Educ*. 2007;22:6–9.
- Goldstein EA, Maclaren CF, Smith S, et al. Promoting fundamental clinical skills: a competency-based college approach at the University of Washington. *Acad Med*. 2005;80:423–433.
- Fleming A, Cutler W, Moutsios S, et al. Building learning communities. *Acad Med*. 2013;88:1246–1251.
- Ferguson KJ, Wolter EM, Yarbrough DB, et al. Defining and describing medical learning communities: results of a national survey. *Acad Med*. 2009;84:1549–1556.
- Smith S, Shochet R, Fleming A, Keeley M, Moynahan K. The growth of learning communities in undergraduate medical education. *Acad Med*. 2014;89:928–933.
- Liaison Committee on Medical Education. Number of Medical Schools Organizing Students into Colleges or Mentorship Groups. <https://www.aamc.org/initiatives/cir/425510/19a.html>. Accessed September 15, 2018.
- Jackson MB, Keen M, Wenrich MD, et al. Impact of a pre-clinical clinical skills curriculum on student performance in third-year clerkships. *J Gen Intern Med*. 2009;24:929–933.
- Levine RB, Shochet RB, Cayea D, et al. Measuring medical students' sense of community and satisfaction with a structured advising program. *Int J Med Educ*. 2011;2:125–132.
- Smith SD, Dunham L, Dekhtyar M, et al. Medical student perceptions of the learning environment: learning communities are associated with a more positive learning environment in a multi-institutional medical school study. *Acad Med*. 2016;91:1263–1269.
- Brandl K, Schneid SD, Smith S, et al. Small group activities within academic communities improve the connectedness of students and faculty. *Med Teach*. 2017;39:813–819.
- Sastre EA, Burke EE, Silverstein E, et al. Improvements in medical school wellness and career counseling: a comparison of one-on-one advising to an Advisory College Program. *Med Teach*. 2010;32:e429–e435.
- Wagner JM, Fleming AE, Moynahan KF, et al. Benefits to faculty involved in medical school learning communities. *Med Teach*. 2015;37:476–481.
- www.learningcommunitiesinstitute.org.
- Miller WL. *Doing Qualitative Research*. Thousand Oaks, CA: SAGE; 1999.
- Kuh GD. *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Washington, DC: Association of American Colleges and Universities; 2008.
- Cooke M, Irby DM, 'Brien BC. *Educating Physicians: A Call for Reform of Medical School and Residency*. Vol 16, San Francisco, CA: Jossey-Bass; 2010:75–112.
- Hirsh DA, Ogur B, Thibault GE, Cox M. Continuity as an organizing principle for clinical education reform. *N Engl J Med*. 2007;356:858–866.
- Chou CL, Johnston CB, Singh B, et al. A "safe space" for learning and reflection: one school's design for continuity with a peer group across clinical clerkships. *Acad Med*. 2011;86:1560–1565.
- Daloz LA. *Mentor: Guiding the Journey of Adult Learners*. 2nd ed. San Francisco, CA: Jossey-Bass; 2012.
- Hauer KE, O'Brien BC, Hansen AL, et al. More is better: students describe successful and unsuccessful experiences with teachers differently in brief and longitudinal relationships. *Acad Med*. 2012;87:1389–1396.
- Ibarra H. Provisional selves: experimenting with image and identity in professional adaptation. *Admin Sci Quart*. 1999;44:764–791.
- Tinto V, Goodsell A. Freshman interest groups and the first-year experience: constructing student communities in a large university. *J First Year Exp Stud Transit*. 1994;1:7–28.
- Wawrzynski MR, Jessup-Anger J, Stolz K, et al. Exploring students' perceptions of academically-based living-learning communities. *College Stud Affairs J*. 2009;28:138–158.
- Stoddard HA, Borges NJ. A typology of teaching roles and relationships for medical education. *Med Teach*. 2016;38:280–285.
- Levine RB, Cayea D, Shochet RB, Wright SM. Case study: a mid-clerkship crisis-lessons learned from advising a medical student with career indecision. *Acad Med*. 2010;85:654–659.
- Finley A, McNair T. *ERIC ED582014: Assessing Underserved Students' Engagement in High-Impact Practices*. Washington, DC: Association of American Colleges and Universities; 2013.
- Rendon LI. *Reconceptualizing Success for Underserved Students in Higher Education*. Washington, DC: National Postsecondary Educational Cooperative; 2006.
- Osterberg LG, Goldstein E, Hatem DS, Moynahan K, Shochet R. Back to the future: what learning communities offer to medical education. *J Med Educ Curric Dev*. 2016;3:67–70.
- Dyrbe LN, West CP, Satele D, et al. Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. *Acad Med*. 2014;89:443–451.
- Bicket M, Misra S, Wright SM, Shochet R. Medical student engagement and leadership within a new learning community. *BMC Med Educ*. 2010;10:20.
- Arnold L, Cuddy PG, Hathaway SB, Quaintance JL, Kanter SL. Medical school factors that prepare students to become leaders in medicine. *Acad Med*. 2018;93:274–282.
- Kuh GD. Why integration and engagement are essential to effective educational practice in the twenty-first century. *Peer Rev*. 2008;10:27–28.
- Haidet P, Stein H. The role of student-teacher relationships in the formation of physicians: the hidden curriculum as process. *J Gen Intern Med*. 2006;21:S16–S20.